Thermite Reaction.

A thermite reaction is basically iron oxide (rust) reacting with aluminum to produce molten iron. The reaction is initiated by the heat from burning magnesium ribbon which is placed in the iron oxide/aluminum mixture, this is the fuse! (Any heat source can be used to start the reaction but it needs to be very hot as magnesium burns at about 650°C (1200°F) A sparkler may work but I have not tried this.)

Because it is spectacular and simple this my favorite reaction!

This reaction is highly exothermic and produces molten metal at about 3000°c. Water should not be used to extinguish the reaction, since addition of water to hot iron produces potentially explosive hydrogen gas. Enjoy the pictures below:-

(Click on any image below for a bigger picture)

The mixture of rust and aluminum (we found 50/50 works well, Not weight!)	Ready with the magnesium fuse and 2 sheets of 3mm steel under the flowerpot	John lights the fuse....	There goes the magnesium getting it up to temperature to start the reaction

Burn baby	Burn, burn	Burn!!	Yeah thats about 3000°C, it's melted through the sheet steel

Still glowing red hot	Not surprising really	And it's actually welded the Steel together!

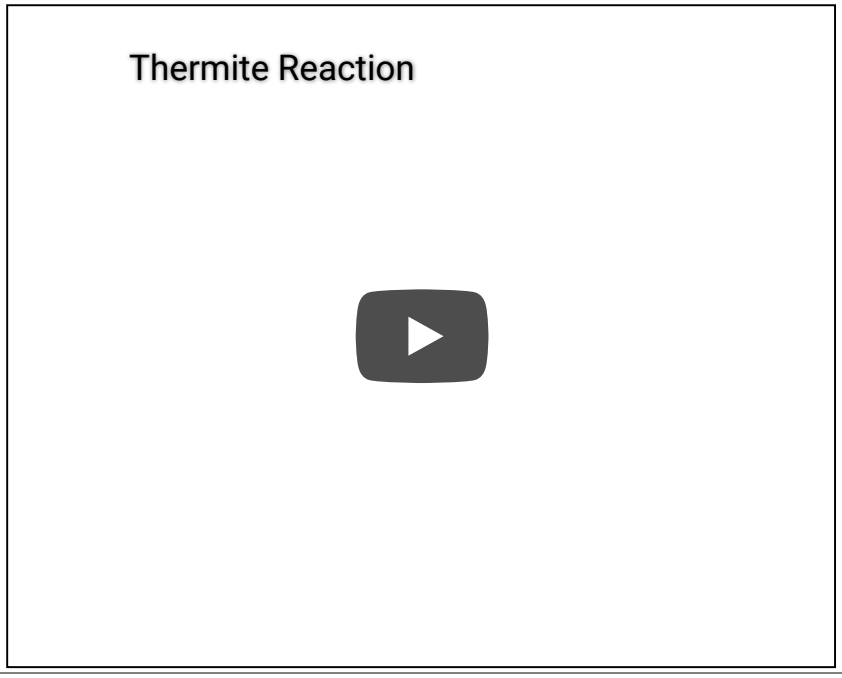
The Science Bit:-

This works because the thermite mixture is aluminum powder and iron oxide (rust) powder. When the mixture is heated, it starts reacting: the aluminum is more reactive than the iron, so it "pinches" the oxygen from the iron to make aluminum oxide and iron.

A balanced equation for the reaction is:-

$Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$

Thermite reaction video



DISCLAIMER OF LIABILITY:

This experiment is potentially dangerous; www.davidavery.co.uk assumes no legal liability or responsibility for the use or misuse of the information contained on this page.

This experiment is listed for information purposes only and should only be conducted by qualified chemists who are aware of proper chemical and apparatus usage. Safety precautions such as the use of goggles, aprons, gloves, and so forth are assumed.

Read the full disclaimer

Disclaimer | Contact Me | Sitemap

© David Avery 2004-07